CLAIMS

What is claimed is:

1. A method of optimizing a filter response of an arrayed waveguide grating, the method comprising the steps of:

a) measuring a respective phase error of a plurality of waveguide cores of an arrayed waveguide grating; and

b) adjusting a respective optical path length of the cores in accordance with the respective phase error of the cores by adjusting a respective refractive index of the cores, thereby optimizing a filter response of the arrayed waveguide grating.

2. The method of claim 1 wherein the respective phase error is measured using a low coherent optical interferometer.

3. The method of claim 2 wherein the respective phase error is measured to within nanometer resolution.

4. The method of claim 1 wherein the respective refractive index is adjusted by using laser energy.

5. The method of claim 4 wherein the laser energy is ultraviolet laser energy.

6. The method of claim 1 wherein the adjusting of the refractive index of the cores is used to equalize channel power of the arrayed waveguide grating.

7. The method of claim 1 wherein the adjusting of the refractive index of the cores is used to compensate for dispersion within the arrayed waveguide grating.

8. The method of claim 1 wherein the refractive index of the cores is adjusted within a grating area of the arrayed waveguide grating by using laser energy.

9. A method for performing wavefront reshaping on an arrayed waveguide grating, the method comprising the steps of:

a) performing phase error measurement of a plurality of waveguide cores of an arrayed waveguide grating; and

b) adjusting a respective optical path length of the cores in accordance with the phase error measurement by adjusting a respective refractive index of the cores, thereby performing wavefront reshaping on the arrayed waveguide grating.

10. The method of claim 9 wherein the phase error measurement is performed using a low coherent optical interferometer.

11. The method of claim 9 wherein the phase error measurement has a resolution of one nanometer or less.

12. The method of claim 9 wherein the respective refractive index is adjusted by using laser energy within a grating area of the arrayed waveguide grating.

13. The method of claim 12 wherein the laser energy is ultraviolet laser energy.

14. The method of claim 13 wherein the adjusting of the refractive index of the cores is used to equalize channel power of the arrayed waveguide grating.

15. The method of claim 9 wherein the adjusting of the refractive index of the cores is used to compensate for dispersion within the arrayed waveguide grating.

16. An arrayed waveguide grating having a laser trimmed optimized filter response, comprising a plurality of waveguide cores within a grating, each of the plurality of cores having an optical path length adjustment region configured to receive laser energy and to adjust a respective refractive index within the adjustment region in response to the laser energy, the respective refractive index adjusted in accordance with a respective phase error of the cores to produce the optimized filter response.

17. The arrayed waveguide grating of claim 16 wherein each of the optical path length adjustment regions are configured to receive ultraviolet laser energy.